

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A medical device comprising
[[(a)]] an elongate body adapted for insertion into a body lumen, said elongate body having distal and proximal ends and an axis; and
[[(b)]] an active region comprising a conductive polymer disposed over the elongate body, wherein said conductive polymer has an activated state when exposed to an electrical potential and a deactivated state when unexposed to an electrical potential, wherein the activated state is volumetrically expanded in at least one radial dimension relative to the deactivated state, wherein, in the activated state, such that the medical device is expanded in at least one radial dimension relative to said deactivated state axis upon volumetric expansion of the conductive polymer within the active region;
wherein said active region surrounds said elongate body in the form of a continuous circumferential band having a length, the active region being bonded to the elongate body along said length.
2. (Currently Amended) The medical device of claim 1, further comprising wherein said device comprises two or more active regions.
3. (Canceled)
4. (Currently Amended) The medical device of claim 1, further comprising a deformable region, wherein [[a]] said deformable region is expanded in said at least one radial dimension upon volumetric expansion of said conductive polymer.
- 5-6. (Canceled)
7. (Withdrawn- Currently Amended) The medical device of claim 1, wherein said

active region is provided in a distal region of said elongate body at the distal end of said device,
and wherein said active region increases in thickness with increasing distance from ~~[[the]]~~ a
distal tip of the ~~device~~ elongate body.

8. (Withdrawn- Currently Amended) The medical device of claim 7, wherein said active region comprises a series of circumferential bands that increase in thickness with increasing distance from the distal tip of the ~~device~~ elongate body.

9. (Original) The medical device of claim 1, wherein said active region is disposed in a recess formed in the elongate body.

10. (Original) The medical device of claim 9, wherein recess is a circumferential recess.

11. (Original) The medical device of claim 9, wherein recess is a longitudinal recess.

12. (Original) The medical device of claim 1, said medical device is a catheter.

13. (Original) The medical device of claim 12, wherein said active region is provided at a distal end of said catheter.

14. (Withdrawn) The medical device of claim 13 wherein said catheter is a guide catheter.

15. (Previously Presented) The medical device of claim 12, wherein said catheter is a balloon catheter that further comprises a balloon.

16. (Previously Presented) The medical device of claim 15, wherein one or more active regions are disposed such that, upon expansion of the conductive polymer within the one or more active regions, at least a portion of the balloon is expanded from a first position to a second position that is radially beyond the first position.

17. (Withdrawn) The medical device of claim 1, wherein said medical device is a guidewire.

18. (Withdrawn) The medical device of claim 17, wherein said active region is provided at the distal end of said guidewire.

19. (Withdrawn) The medical device of claim 18, wherein the distal end of said guidewire is flattened.

20. (Withdrawn) The medical device of claim 1, wherein said medical device comprises a cutting blade that is adapted to engage tissue of a surrounding lumen upon insertion of said device and expansion of said conductive polymer within said active region.

21. (Withdrawn) The medical device of claim 20, wherein said medical device comprises two or more cutting blades.

22. (Withdrawn) The medical device of claim 20, wherein said cutting blade is sheathed prior to expansion of said active region.

23. (Withdrawn) The medical device of claim 20, wherein said cutting blade is provided with a diamond cutting edge.

24. (Previously Presented) The medical device of claim 1, wherein one or more active regions are disposed such that at least a portion of the length of said medical device is stiffened upon expansion of the conductive polymer within the one or more of said active regions.

25. (Canceled)

26. (Withdrawn) The medical device of claim 24, wherein said medical device is a

guidewire.

27. (Withdrawn) The medical device of claim 24, wherein said medical device is guide catheter.

28. (Currently Amended) A medical device comprising
[[(a)] an elongate body adapted for insertion into a body lumen, said elongate body having distal and proximal ends and an axis;

[[(b)] an inflatable balloon disposed about a distal region of the elongate body; and

[[(c)] an active region comprising a conductive polymer disposed over the elongate body and beneath the inflatable balloon, wherein said active region has a length, the entire length of the active region is directly attached to the elongate body, where said active region is configured volumetrically expand in a radial dimension when exposed to an electrical potential, and, when exposed to said electrical potential, being adapted to said active region radially advances at least a portion of the inflatable balloon from when the balloon is in a substantially uninflated state to a first expanded state by the volumetric expansion of the conductive polymer within the active region.

29. (Canceled)

30. (Currently Amended) The medical device of claim 28, wherein said active region is adapted to radially advance a proximal portion of said inflatable balloon when exposed to said electrical potential.

31. (Currently Amended) The medical device of claim 28, wherein said active region is adapted to radially advance proximal and distal portions of said inflatable balloon when exposed to said electrical potential.

32. (Currently Amended) The medical device of claim 28, wherein said active region is adapted to radially advance proximal, central and distal portions of said inflatable balloon when exposed to said electrical potential.

33. (Withdrawn- Currently Amended) The medical device of claim 28, ~~wherein said medical device~~ further comprising~~[[es]]~~ a stent disposed over said inflatable balloon.

34. (Currently Amended) The medical device of claim 28, wherein at least a portion of the inflatable balloon is radially advanced directly by the volumetric expansion of the ~~conductive polymer within the~~ active region.

35. (Currently Amended) The medical device of claim 28, wherein at least a portion of the inflatable balloon is radially advanced by a passive deformable region, said passive deformable region expanding in at least one radial dimension upon volumetric expansion of said ~~conductive polymer within said~~ active region.

36. (Previously Presented) The medical device of claim 28, wherein said active region surrounds said elongate body in the form of a continuous circumferential band.

37. (Original) The medical device of claim 28, wherein said active region is provided over said elongate body in the form of a longitudinal member.

38. (Original) The medical device of claim 28, wherein said active region is disposed in a recess formed in said elongate body.

39-42. (Canceled)

43. (Withdrawn-Currently Amended) A method comprising:
[[a)] inserting the medical device of claim 28 into a body lumen[[.]],
[[b)] volumetrically expanding the conductive polymer within said active region such that at least a portion of the balloon is radially advanced to a first position while in a substantially uninflated state; and

[[c)] inflating said balloon such that said balloon is radially advanced from said first position to a second position that is radially beyond the first position.

44-49. (Canceled)

50. (Currently Amended) A balloon catheter comprising:

[[~~(a)~~]] ~~an insertable body a catheter shaft~~ adapted for insertion into a body lumen of a patient, ~~said catheter shaft defining an inflation lumen;~~

~~(b) a device lumen within said insertable body;~~

[[~~(c)~~]] ~~an inflatable balloon disposed about a distal region of said catheter shaft~~, wherein the interior of said balloon is in fluid communication with said ~~inflation device~~ lumen~~[[,]]~~, and

[[~~(d)~~]] ~~one or more electrically actuated members disposed along at least a portion of the distal region of said catheter shaft, wherein said one or more electrically actuated members are radially positioned between said elongated shaft and said inflatable balloon length of said device lumen, wherein, when activated, said one or more electrically actuated members [[being]] are adapted to transform said inflatable balloon at least a portion of the length of said device lumen between (i) a radially expanded state and (ii) from a radially contracted state in which said insertable body is more readily inserted into said body lumen of said patient to a first radially expanded state, wherein said inflatable balloon is configured to be further expanded to a second radially expanded state with an inflation media received via the inflation lumen, wherein the second radially expanded state is larger than the first radially expanded state;~~

~~wherein said one or more electrically actuated member are disposed between the device lumen and the inflatable balloon.~~

51. (Withdrawn-Currently Amended) The balloon catheter of claim 50, wherein said one or more electrically actuated members extend along [[the]] an entire length of the device lumen catheter shaft.

52. (Currently Amended) The balloon catheter of claim 50, wherein said one or more electrically actuated members extend along only [[the]] an insertable length of said device lumen catheter shaft.

53. (Withdrawn-Currently Amended) The balloon catheter of claim 50, wherein

[[the]] a cross-sectional area of said lumen in said first radially expanded state is at least 25% greater than the cross-sectional area of said lumen in said radially contracted state.

54. (Previously Presented) The balloon catheter of claim 50, wherein said one or more electrically actuated members are electroactive polymer actuators.

55. (Withdrawn) The balloon catheter of claim 50, wherein said or more electrically actuated members are piezoelectric actuators.

56. (Currently Amended) The balloon catheter of claim 50, wherein said one or more electrically actuated members ~~medical device~~ comprises a single electrically actuated member.

57. (Currently Amended) The balloon catheter of claim 50, wherein said one or more electrically actuated members ~~medical device~~ comprises a plurality of electrically actuated members.

58. (Withdrawn-Currently Amended) The balloon catheter of claim 50, wherein said one or more electrically actuated members contain regions of narrowed cross-section, thereby increasing flexibility along the length of said ~~device-lumen~~ catheter shaft.

59. (Withdrawn) The balloon catheter of claim 50, wherein said one or more electrically actuated members are adapted to bend or unbend in response to an applied voltage.

60. (Canceled)

61. (Currently Amended) The balloon catheter of claim 50, wherein said one or more electrically actuated members are disposed within said ~~insertable body~~ catheter shaft.

62. (Withdrawn-Currently Amended) The balloon catheter of claim 50, wherein said one or more electrically actuated members are disposed on an outside surface of said ~~insertable body~~ catheter shaft.

63. (Currently Amended) The balloon catheter of claim 50, wherein said ~~insertable~~ body catheter shaft is an extruded body.

64. (Canceled)

65. (Withdrawn-Currently Amended) The balloon catheter of claim 50, wherein said catheter shaft further defines ~~comprising~~ a guidewire lumen.

66. (Withdrawn-Currently Amended) The balloon catheter of claim 50, wherein said catheter shaft ~~medical device comprises~~ defines multiple device lumens.

67-68. (Canceled)

69. (Withdrawn) The medical device of claim 22, wherein said cutting blade is sheathed in a protective body comprising a depression from which the cutting blade emerges upon expansion of said active region.

70. (Withdrawn) The medical device of claim 22, wherein said cutting blade is sheathed in a lumen comprising an aperture through which the cutting blade emerges upon expansion of said active region.

71. (Original) The medical device of claim 4, wherein said deformable region is an elongated flexible material.

72. (Original) The medical device of claim 4, wherein said deformable region is an elastic region.

73. (Previously Presented) The medical device of claim 24, wherein said medical device is stiffened upon radial expansion of the conductive polymer within said one or more of said active regions.

74. (Previously Presented) The medical device of claim 24, wherein said medical device is stiffened upon longitudinal expansion of the conductive polymer within said one or more of said active regions.

75. (Withdrawn) The medical device of claim 74, wherein said one or more of said active regions engage each other upon longitudinal expansion.

76. (Withdrawn) The medical device of claim 74, wherein said one or more of said active regions engage a region of rigid material upon longitudinal expansion.

77. (Canceled)

78. (Withdrawn) The medical device of claim 50, wherein said one or more electrically actuated members are adapted to coil or uncoil in response to an applied voltage.

79. (Withdrawn) The medical device of claim 50, wherein said one or more electrically actuated members are electrostrictive actuators.

80. (Original) The medical device of claim 24, wherein said medical device is balloon catheter.

81. (Previously Presented) The medical device of claim 1, further comprising an electrolyte in contact with said conductive polymer.

82. (Previously Presented) The medical device of claim 81, further comprising a counterelectrode.

83. (Previously Presented) The medical device of claim 82, wherein said active region, said electrolyte, and said counter electrode are enclosed within a sealed structure.

84. (Previously Presented) The medical device of claim 16, wherein the active region is disposed over the elongate body and beneath the balloon.

85. (Previously Presented) The medical device of claim 28, wherein a plurality of said active regions are disposed over the elongate body and beneath the balloon.

86. (Currently Amended) The medical device of claim 28, further comprising a sealed structure that encloses said active region, an electrolyte and a counter electrode.

87. (Currently Amended) The medical device of claim 28, further comprising a plurality of said active regions wherein a first active region is disposed over a first conductive radio-opaque band and wherein a second active region is disposed over a second conductive radio-opaque band that is positioned distal to said first conductive radio-opaque band.